SONY®

VIDEO PROJECTOR
VPL-VW100

PROTOCOL MANUAL
1st Edition

⚠ 警告

このマニュアルは，サービス専用です。
お客様が，このマニュアルに記載された設置や保守，点検，修理などを行うと感電や火災，
人身事故につながることがあります。
危険をさけるため，サービストレーニングを受けた技術者のみご使用ください。

⚠ WARNING

This manual is intended for qualified service personnel only.
To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that
contained in the operating instructions unless you are qualified to do so. Refer all servicing to
qualified service personnel.

⚠ WARNUNG

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.
Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die
Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei
Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegeben
Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung
dazu besitzen.

⚠ AVERTISSEMENT

Ce manual est destiné uniquement aux personnes compétentes en charge de l'entretien. Afin
de réduire les risques de décharge électrique, d'incendie ou de blessure n'effectuer que les
réparations indiquées dans le mode d'emploi à moins d'être qualifié pour en effectuer d'autres.
Pour toute réparation faire appel à une personne compétente uniquement.

Table of Contents

1. Introduction

This protocol manual describes the basic configuration and basic operations of various commands used for projector. Projector can be controlled using the commands provided in "Appendix". Using an external CONTROLLER , etc., inputs can be switched and the power can also be turned on and off. In the following paragraphs, "CONTROLLER" means an external device such as a PC which controls projector using these commands.

2. RS-232C

2-1. Communication Specifications

<RS-232C Communication Signal>

・ Full duplex communication channels (Flow control not performed.)
・ Start-stop synchronism system
・ Baud rate: 38.4 kbps (bits per second)
・ The bit configuration is defined as follows.

1 START Bit + 8 DATA Bits + 1 PARITY Bit + 1 STOP Bit

START BIT	D0 (LSB)	D1	D2	D3	D4	D5	D6	D7 (MSB)	PARITY (EVEN)	STOP BIT

EVEN Parity   ...... Total number of "1"s from D0 to D7 is an even number. $\Rightarrow$ 0
                  ...... Total number of "1"s from D0 to D7 is an odd number. $\Rightarrow$ 1

2-2. Command Block Format

The code from B0 to B7 as described below are transmitted.

	Transmission from the Master side	Reception in the Master side	Reception in the Master side (With Data)
B0	START CODE : 0xA9		
B1	ITEM NUMBER	ACK / NAK	ITEM NUMBER
B2			
B3	SET / GET	ACK	REPLY
B4	DATA	DUMMY DATA	DATA
B5			
B6	CHECK SUM		
B7	END CODE : 0x9A		

B0 START CORD
Common in the all FORMAT

B6 CHECK SUM
B1 to B5 are calculated by OR;

<Example of Calculation>

0xA9	1010	1001	0xA9	1010	1001
0xA9	1010	1001	0x9A	1001	1010
Answer	1010	1001	Answer	1011	1011
		0xA9			0xBB

B7 END CODE
Common in the all FORMAT

2-3. Block Format

	Transmission from the Master side		Data transmission to the Projector

B0	START CODE	Start of Command
B1	ITEM NUMBER	Set the Data Category Value desired.
B2		Refer to the Appendix Table 1 for details.
B3	SET / GET	SET: 0x00 (Set data) GET: 0x01 (Get data)
B4	DATA	SET: Data to be set (Refer to the Appendix Table 2)
B5		GET: Unused. Set Dummy data [0x00, 0x00]
B6	CHECK SUM	Check Sum
B7	END CODE	End of Command

	Reception in the Master side		Receive results of the data transmission from the Projector.

B0	START CODE	Start of Command
B1	ACK / NAK	Results correspond with the data transmission
B2		Refer to the Appendix Table 3 for the data in detail.
B3	ACK	[0x03] Express Reply data either of ACK, or NAK
B4	DUMMY DATA	This data does not mean any senses.
B5		Dummy Data [0x00, 0x00] is stored.
B6	CHECK SUM	Check Sum
B7	END CODE	End of Command

	Reception in the Master side (With Data)		Receive data from the Projector

B0	START CODE	Start of Command
B1	ITEM NUMBER	Data to acquire
B2		Refer to the Appendix Table 1 in detail.
B3	REPLY	[0x02] Express data to be Reply data
B4	DATA	Received data
B5		Refer to the Appendix Table 2 in detail.
B6	CHECK SUM	Check Sum
B7	END CODE	End of Command

2-4. Connection

<RS-232C Connection>

Communication is enabled by the use of a D-Sub 9 Pin cross (reverse) cable.
The pin assignment of D-Sub 9 Pin and D-Sub 25 Pin is as follows.

D-Sub 9 Pin	D-Sub 25 Pin		Name
Shell = FG	1	FG	Grounding for safety protection or cable shield
3	2	TxD	Transmission data
2	3	RxD	Reception data
7	4	RTS	Transmission request
8	5	CTS	Transmission permission
6	6	DSR	Data set ready
5	7	SG	GND for signal
1	8	DCD	Data channel signal carrier detection
4	20	DTR	Data terminal ready
9	22	RI	Calling display (Presence/absence of calling signal)

Pins indicated as D-Sub 25 Pin are not used.
Assured cable length: 15 m (However, assurance may not be applicable for some cables.)

The software for controlling the projector from a PC is intended for performing transmission and reception for only the TxD and RxD lines.
Therefore there is no handshake normally performed by RS-232C.

2-5. Communication Procedure

2-5-1. Outline of Communication

All communication between CONTROLLER (PC, etc.) and DEVICE (PROJECTOR) is performed by the command block format. Communication is started by the issue of a command at CONTROLLER and ended when the return data is sent to CONTROLLER after DEVICE receives the command. CONTROLLER is prohibited from sending several commands at one time. This means that after CONTROLLER sends one command, it cannot send other commands until DEVICE returns the return data. DEVICE sends the return data after processing the command. The time from when CONTROLLER sends the command until the return data is returned differs according to the contents of the command.

Note

When Sircs Direct Command is sent, return data may not be returned in some cases.

2-6. Communication Rules

・ When sending a command from CONTROLLER, the return data from PROJECTOR should be received first before sending the next command. Even if the next command is sent before receiving the return data, since PROJECTOR will not be able to receive that command, it does not return a response to CONTROLLER. Consequently, no error code is also sent.
The following lists the approximate waiting times for PROJECTOR to return the return data after CONTROLLER sends the command.
・ When a communication error occurs, PROJECTOR ignores the data received until now, and set into the reception standby state.
・ For undefined commands or commends determined as invalid by PROJECTOR, PROJECTOR will send the "NAK" return data to CONTROLLER .
・ Take note that when data is written when the input signal of PROJECTOR is unstable, that data (value) will not be incorporated.
・ When INDEX specified SIRCS direct command is transmitted, leave an interval of 45 msec until the next transmission. (Do not return the return data (ACK, NAK) when the SIRCS direct command is received.)

2-7. Approximate Return Waiting Times

The await-return time is approx. 30 msec.

 Note
This is the case, unless the communications are interfered anyway.

3. NETWORK

This section describes the performance, operations and protocol to be used of advertisement and PJ Talk.

3-1. Advertisement

The advertisement service is provided to facilitate development of a PC application that can automatically detect a projector on the network. This function is achieved by broadcasting the equipment information periodically to the network.

3-1-1. Function

The equipment information shown below is transmitted as the broadcast packet periodically (at certain intervals).

Information	Description
Category	Category of the equipment
Equipment name	Name of the equipment
Serial number	Serial number of the equipment
Installation information	Installation location of the equipment
Community	Community name of the equipment
Power status	Power status of the equipment

Notes
- The category of projector is 0x0a.
- The power status sets ffffh if communication error occurs.

Protocol

The SDAP protocol is defined in order to provide this service.

Item	Description
Protocol name	SDAP (Simple Display Advertisement Protocol)
Transport	UDP
Port number	53862 (Factory-shipments value)
Broadcast interval	Once every 30 seconds (Factory-shipments value)

3-1-2. Setup Items

The items that can be set for the advertisement service are described below.

Setup items	Description
Port No.	Port number
Interval	Broadcast interval
Broadcast Address	Adding the transmission place.

3-2. PJ Talk

The remote control service is provided that can control the projector from remote location via network.

3-2-1. Function

This responds to the control command and requests for acquiring the status and information supplied from clients.

Control request
Enables the input to be selected and picture control to be adjusted.

SIRCS request
Enables remote control by sending the SIRCS code.

Status request
Enables equipment status information such as power status, error information and power-on time to be acquired.

Information request
Enables equipment information such as equipment name, serial number and installation information to be acquired.

Protocol

| Item	Description
Protocol name	SDCP (Simple Display Control Protocol)
Transport	TCP
Port number	53484 (Factory-shipments value)
TCP connection timeout	30 seconds (Factory-shipments value)

3-2-2. Setup Items

The items that can be set for the PJ Talk service are described below.

Setup item	Description
Port No.	Port number
Timeout	TCP connection timeout time
Host Address	IP address of connectable PC

3-3. SDAP Protocol

This section describes the SDAP packet structure.

| Header (4) | Community (4) | Product name (12) | Serial No. (4) | Power Status (2) | Location (24) |
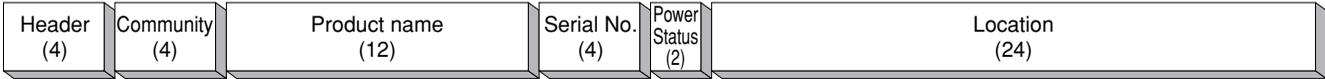
Fig.1 Packet structure

1) Header
   The header consists of ID (16 bit), version (8 bit) and category (8 bits).

| "DA" (16) | Version (8) | Category (8) |

(Bit position)
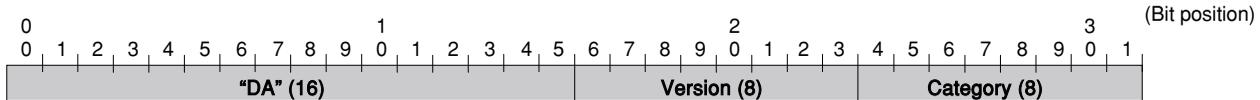
Fig. 2 Header

ID

It is fixed to "DA".

Version

This indicates the version number of protocol.
It is fixed to 01h (version 1).

Category

Category number 0Ah of the projector is entered here.

2) Community (Refer to 3-4-1-2.)
   The community that is set in the display equipment is entered.

| Community (32) |

(Bit position)
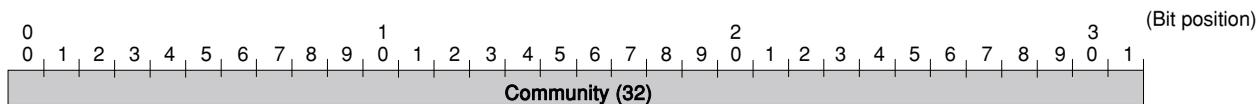
Fig. 3 Community

3) Equipment Information

Product Name

Name of equipment (Maximum twelve characters)
In case, less than twelve characters, 00h is entered in the blank space.

Serial No.

Serial number is entered.

Power Status.

Power supply status of the equipment is entered.

Location

Information of installation location (Maximum twenty four characters)
In case, less than twenty four characters, 00h is entered in the blank space.

8

3-4.   SDCP Protocol

This section describes the packet structure of version 2.

Header (2)	Community (4)	Command (4)	Data (n)

Fig. 1 Packet structure

3-4-1.   Format

3-4-1-1.   Header

The header consists of version (8 bits) and category (8 bits).

```
0                       1              (Bit position)
0  1  2  3  4  5  6  7  8  9  0  1  2  3  4  5
|     Version (8)     |     Category (8)     |
```
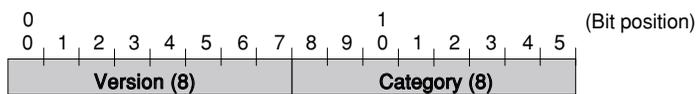
Fig. 2 Header structure

Version

This indicates the version number of protocol.
It is fixed to 02h (version 2).

Category

Category number 0Ah of the projector is entered here. Projector checks the category number. If a different category number is entered, the request is ignored.

3-4-1-2.   Community

When the community data matches the community that is set in the display equipment, the request is executed. Community consists of four alphanumeric characters (case sensitive). All display equipment has the default value "SONY" when shipped from the factory.

```
0                     1                     2                     3   (Bit position)
0  1  2  3  4  5  6  7  8  9  0  1  2  3  4  5  6  7  8  9  0  1  2  3  4  5  6  7  8  9  0  1
|                                    Community (32)                                      |
```
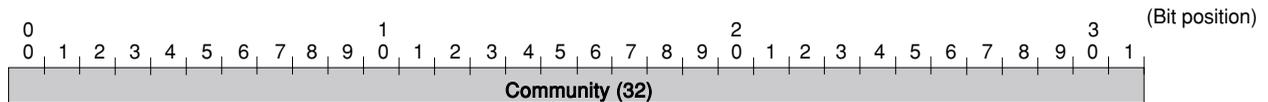
Note

Community should be entered with four characters. Three characters or less are not accepted.

3-4-1-3. Command

This section describes the format of the request command and the response command.
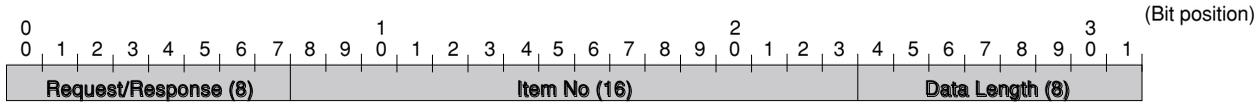
(1) Request
This section describes the format of the request command that is issued from the host PC to the projector.

Community
This is the same alphanumeric characters as those of community that is set in the projector to which request is going to be sent.

Request
There are only two types of request. One is the GET request to acquire the projector information and status. The other is the SET request to modify the projector setup.

Request	Contents
SET (00h)	Used to control turning the power on/off and to control the input selector, and to change the various setups.
GET (01h)	Used to acquire the installation information, equipment status and various setup values.

Item No.
This is the item number of the request target.

Data Length
This is the length of the data accompanying the request. The maximum length is 128 bytes. If there is no data, it is 0.

Data
This is the data accompanying the request.

(2) Response
This section describes the format of the response command which is used to return a response to the host PC from the projector.

Community
The same alphanumeric characters as those of the request is entered.

Response
The response returns the result of executing the request from the host PC.

Response	Contents
NG (00h)	Indicates that the request is illegal or cannot be executed.
OK (01h)	Indicates that the request was executed correctly.

Item No.
The same value as those of the request is entered.

Data Length
This is the length of the data accompanying the response. The maximum length is 128 bytes. If there is no data, it is 0.

Data
This is the data accompanying the response.

3-4-1-4. SET Request

The SET request is used to set a new value in the specified item. Details of the request and the response are described below.

Request

├─ Request ─┤	├──── Item No. ────┤	Data Length	├──────── Data ────────┤
SET (00h)	Item No.	n	Set Data (n byte)

Response

OK (01h)	Item No.	0

3-4-1-5. GET Request

The GET request is used to acquire the value of the specified item. Details of the request and the response are described below.

Request

├─ Request ─┤	├──── Item No. ────┤	Data Length
GET (01h)	Item No.	0

Response

OK (01h)	Item No.	n	Get Data (n byte)

3-4-1-6. ERROR Response

When an error occurs in the contents of a request or in the result of execution, NG is returned as the response.

NG (00h)	Item No.	2	Error Code (16)

3-4-2. Items

Category	Contents	SET	GET
00**h	Used to control and to change the various setups.	○	○
01**h	Used to acquire the status.		○
03**h	Used to reset memory.	○	
17**h	Sircs (15 bit category)	○	
19**h	Sircs (20 bit category)	○	
80**h	Used to acquire equipment information.		○
90**h	Used to acquire network setup information.		○

3-4-2-1. Model Dependent Category

The supported contents of 00**h, 01**h, 03**h, 17**h and 19**h change depending on the model.
Details are shown on Appendix.

3-4-2-2. Equipment Information Acquisition (80**h)

Used to acquire the equipment information.

Lower byte	Contents	SET	GET
00h	Category Code		○
01h	Model name		○
02h	Serial number		○
03h	Installation location	○	○

0x8000 Category code
1 byte

0x8001 Model name
Alphanumeric 12 characters
If the number of characters is less than 12, the remaining digits are filled with 00h.

0x8002 Serial number
4 bytes
| Note |
The serial number is in the range of 00000000 to 99999999.

0x8003 Installation location
Alphanumeric 24 characters
If the number of characters is less than 24, the remaining digits are filled with 00h.

3-4-2-3. Network Information Acquisition (90**h)

Used to acquire the network setup information.

Lower bytes	Contents	SET	GET
00h	MAC Address		○
01h	IP Address		○
02h	Subnet Mask		○
03h	Default Gateway		○
04h	DHCP		○

0x9000 Mac Address
6 bytes

0x9001 IP Address
4 bytes

0x9002 Subnet Mask
4 bytes

0x9003 Default Mask
4 bytes

0x9004 DHCP
1 byte
DHCP invalid: 0
DHCP valid: 1

3-4-3. Error Code

The error code list is shown below with a detailed description of each.

Category	Error	Error Code
Item Error (01**h)	Invalid Item	01h
	Invalid Item Request	02h
	Invalid Length	03h
	Invalid Data	04h
	Short Data	11h
	Not Applicable Item	80h
Community Error (02**h)	Different Community	01h
Request Error (10**h)	Invalid Version	01h
	Invalid Category	02h
	Invalid Request	03h
	Short Header	11h
	Short Community	12h
	Short Command	13h
Network Error (20**h)	Timeout	01h
Comm Error (F0**h)	Timeout	01h
	Check Sum Error	10h
	Framing Error	20h
	Parity Error	30h
	Over Run Error	40h
	Other Comm Error	50h
	Unknown Response	F0h
NVRAM Error (F1**h)	Read Error	10h
	Write Error	20h

3-4-3-1. Item Error

This error occurs when the Item No. of a request is illegal or its data is illegal. The conditions for occurrence of the respective errors are shown below.

Invalid Item
An unsupported Item No. is specified.

Example 1: The unsupported category 0xA** is specified.
Example 2: The unsupported Item No. 0x8010 is specified.

Invalid Item Request
The Item No. is supported but an unsupported Request is issued.

Example: An attempt is made to set data in the Model Name (0x8001).

Invalid Length
Data length of the specified Item No. is too long.

Example: An attempt is made to set 25 byte data in the installation location (0x8003).

Invalid Data
Data of the specified Item No. is outside the setting range.

Example: An attempt is made to set 101 in the Item when the setting range of the Item is 1 to 100.

Short Data
The length of data is shorter than the value specified by the data length.

Example: The actual data length is 9 bytes but data length is 10.

Not Applicable Item
An item that is not valid at present is specified.

Example: The item to switch the display is specified when the main power is off.

3-4-3-2. Community Error

This error occurs when community is different.

Example: "ABCD" is specified when "SONY" is set.

3-4-3-3. Request Error

This error occurs when header or command is illegal. The conditions of occurrence of the respective errors are shown below.

Invalid Version

The version of the header is other than 2.

Note

When another version is supported, an error occurs in all versions other than the supported version.

Invalid Category

The category does not match.

Example: 0x0B is specified in the device of category = 0x0A.

Invalid Request

An unsupported request is specified.

Example: Request = 0x02 is specified.

Short Header

The received data is 1 byte.

Short Community

The received data is in the range of 2 to 5 bytes.

Short Command

The received data is in the range of 6 to 9 bytes.

3-4-3-4. Network Error

This is an error that occurs in TCP/IP. The conditions of occurrence of the respective errors are shown below.

Timeout

Communication was interrupted.

3-4-3-5. Comm Error

This is an error in communication with the main control microprocessor of the display.

Timeout
Reception data is not returned after data is sent.

Check Sum Error
A check sum error occurred in the main control microprocessor of the display.

Framing Error
A framing error occurred.

Parity Error
A parity error occurred.

Over Run Error
An overrun error occurred.

Other Comm Error
Another error occurred.

Unknown Response
The data cannot be processed was received.

3-4-3-6. NVRAM Error

Read Error
Reading from NVRAM was failed.

Write Error
Writing to NVRAM was failed.

Appendix

<Table 1>			<Table 2>			Remarks
Item Number			**Data**			
Item	**Upper byte**	**Lower byte**	**Data**	**Upper byte**	**Lower byte**	
Input	00h	01h	Video	00h	00h	Set/Get
			S Video	00h	01h	
			Input-A	00h	02h	
			Component	00h	03h	
			HDMI	00h	04h	
			DVI	00h	05h	
Picture Mode	00h	02h	Dynamic	00h	00h	
			Standard	00h	01h	
			Cinema	00h	02h	
			User1	00h	03h	
			User2	00h	04h	
			User3	00h	05h	
Contrast	00h	10h	Setting value (0 to 100)	00h	00h to 64h	
Brightness	00h	11h	Setting value (0 to 100)	00h	00h to 64h	
Color	00h	12h	Setting value (0 to 100)	00h	00h to 64h	
Hue	00h	13h	Setting value (0 to 100)	00h	00h to 64h	
Sharpness	00h	14h	Setting value (0 to 100)	00h	00h to 64h	
Col Temp	00h	17h	High	00h	00h	
			Mid	00h	01h	
			Low	00h	02h	
			Custom1	00h	03h	
			Custom2	00h	04h	
			Custom3	00h	05h	
DRC MODE	00h	1Bh	Off	00h	00h	
			Mode1	00h	01h	
			Mode2	00h	02h	
Black Level Adj.	00h	1Ch	Off	00h	00h	
			Low	00h	01h	
			High	00h	02h	
Advanced Iris	00h	1Dh	Off	00h	00h	
			On	00h	01h	
			Auto	00h	02h	
RCP (Real Color Processing)	00h	1Eh	Off	00h	00h	
			User1	00h	01h	
			User2	00h	02h	
			User3	00h	03h	
Film Mode	00h	1Fh	Auto	00h	00h	
			Off	00h	01h	

<Table 1>			<Table 2>			Remarks
Item Number			Data			
Item	Upper byte	Lower byte	Data	Upper byte	Lower byte	
Wide Mode	00h	20h	Full	00h	00h	Set/Get
			Normal	00h	01h	
			Wide Zoom	00h	02h	
			Zoom	00h	03h	
			Subtitle	00h	04h	
Gamma Correction	00h	22h	Off	00h	00h	
			Gamma 1	00h	01h	
			Gamma 2	00h	02h	
			Gamma 3	00h	03h	
OverScan	00h	23h	Off	00h	00h	
			On	00h	01h	
Screen Area	00h	24h	Full	00h	00h	
			Through	00h	01h	
NR	00h	25h	Off	00h	00h	
			Low	00h	01h	
			Middle	00h	02h	
			High	00h	03h	
PictureMuting	00h	30h	Off	00h	00h	
			On	00h	01h	
Input-A Signal Sel	00h	32h	Auto	00h	00h	
			Computer	00h	01h	
			Component	00h	02h	
			Video GBR	00h	03h	
DVI Signal Sel	00h	33h	Auto	00h	00h	
			Computer	00h	01h	
			Video GBR	00h	03h	
Color Space	00h	3Bh	Normal	00h	00h	
			Wide	00h	01h	
USER GAIN RED	00h	50h	Setting value (−30 to 30)	E2h to 1Eh (−30 to 30)		
USER GAIN GREEN	00h	51h	Setting value (−30 to 30)	E2h to 1Eh (−30 to 30)		
USER GAIN BLUE	00h	52h	Setting value (−30 to 30)	E2h to 1Eh (−30 to 30)		
USER BIAS RED	00h	53h	Setting value (−30 to 30)	E2h to 1Eh (−30 to 30)		
USER BIAS GREEN	00h	54h	Setting value (−30 to 30)	E2h to 1Eh (−30 to 30)		
USER BIAS BLUE	00h	55h	Setting value (−30 to 30)	E2h to 1Eh (−30 to 30)		
GAIN RED	00h	80h	Setting value (0 to 255)	00h	00h to FFh	
GAIN GREEN	00h	81h	Setting value (0 to 255)	00h	00h to FFh	
GAIN BLUE	00h	82h	Setting value (0 to 255)	00h	00h to FFh	
BIAS RED	00h	83h	Setting value (0 to 255)	00h	00h to FFh	
BIAS GREEN	00h	84h	Setting value (0 to 255)	00h	00h to FFh	
BIAS BLUE	00h	85h	Setting value (0 to 255)	00h	00h to FFh	

<Table 1>			<Table 2>			Remarks
Item Number			Data			
Item	Upper byte	Lower byte	Data	Upper byte	Lower byte	
Status Error	01h	01h	No Error	00h	00h	Get only
			Lamp Error	00h	01h	
			Fan Error	00h	02h	
			Cover Error	00h	04h	
			Temp Error	00h	08h	
			D5V Error	00h	10h	
			Power Error	00h	20h	
			Temp Warning Error	00h	40h	
			NVM Data Error	00h	80h	
Status Power	01h	02h	Stanby	00h	00h	
			Start Up	00h	01h	
			Start Up Lamp	00h	02h	
			Power On	00h	03h	
			Cooling1	00h	04h	
			Cooling2	00h	05h	
			Saving Cooling1	00h	06h	
			Saving Cooling2	00h	07h	
			Saving Stanby	00h	08h	
Control Mode	01h	05h	User Mode	00h	00h	
			Service Mode	00h	01h	
Lamp Timer	01h	13h	Lamp Use Time	0000h-FFFFh *1		
ROM Version	01h	1Dh	MAIN ROM Version	*2		
SC ROM Version	01h	1Eh	SC ROM Version	*2		
NVM Data VERSION	01h	27h	NVM data VERSION	*3		
W/B All Save	03h	04h	–	00h	00h	Set only
W/B Low Save		05h				
W/B High Save		06h				
W/B Middle Save		07h				
W/B Custom1 Save		08h				
W/B Custom2 Save		09h				
W/B Custom3 Save		0Ah				
Sircs(15 bit category)	17h	Refer to Table4	–	00h	00h	Set only *4
Sircs(20 bit category)	19h	Refer to Table5	–	00h	00h	

*1 Example) In case the lamp timer indicates 1000H, return values are [03h] upper byte and [E8h] lower byte.
*2 Example) In case the software version is 1.03, return values are [01h] upper byte and [03h] lower byte.
*3 Example) In case the NVM data version is 3, return values are [00] upper byte and [03] lower byte.
*4 It is corresponded to single command only.

<Table 3>			
Item Number		**Data**	
Item	**Data**	**Upper byte**	**Lower byte**
ACK	–	00h	00h
NAK	Undefined Command	01h	01h
	Size Error		04h
	Select Error		05h
	Range Over		06h
	Not Applicable		0Ah
	Check Sum Error	F0h	10h
	Framing Error		20h
	Parity Error		30h
	Over Rub Error		40h
	Other Comm Error		50h

Waiting time for the return value is about 200 msec.

Note

This waiting time for the return value is subject to the conditions that communication is not bothered by any reasons.

List of SIRCS CODE

<15BIT CATEGORY>   <Table 4>

	x0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x																
1x						POWER ON/OF ∗1			CONTRAST+ HIGH	CONTRAST- LOW	COLOR+ HIGH	COLOR- LOW			BRITNESS+ BRIGHT	BRITNESS- DARK
2x	HUE+ PURPLISH	HUE- GREENISH	SHARPNESS+ SHARP	SHARPNESS- SOFT	PICTURE MUTING	STATUS ON	STATUS OFF			MENU	VIDEO	INPUT A	COMPONENT		POWER ON ∗1	POWER OFF
3x				CURSOR →	CURSOR ←	CURSOR ↑	CURSOR ↓									
4x		ADJ R	ADJ G	ADJ B				SIZE	SHIFT							
5x			W/B GAIN	W/B BIAS				INPUT SELECT			ENTER				MEMORY	S VIDEO
6x																HDMI
7x	DVI		LENS SHIFT ↑	LENS SHIFT ↓	LENS FOCUS F	LENS FOCUS N		LENS ZOOM L	LENS ZOOM S			RESET				

∗1. When the Standby mode is set to [Low], the projector enters the Power-Saving mode in about 1 minute after Standby. If any command is sent during the Standby mode, "Not Applicable" is returned. However, if the same command is sent again, the command will be executed.

<20BIT CATEGORY>   <Table 5>

	x0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x									RCP	ADJUST PICTURE TOGGLE						
1x																
2x																
3x											V KEYSTONE					
4x													DRC MODE TOGGLE			
5x		PICTURE MODE DYNAMIC	PICTURE MODE STANDARD	PICTURE MODE CINEMA	PICTURE MODE USER1	PICTURE MODE USER2	PICTURE MODE USER3					PICTURE MODE TGL				
6x		DOT PHASE	LENS ZOOM	LENS SHIFT	LENS FOCUS										WIDE MODE TOGGLE	
7x									LENS CONT TOGGLE							

VPL-VW100